

1. (Thrice Amended) A backplane system, comprising:
 - a substrate;
 - a waveguide connected to the substrate, the waveguide having conductive sidewalls, and a gap for preventing propagation of a lower order mode into a higher order mode;
 - at least one transmitter connected to the waveguide for sending an electrical signal along the waveguide; and
 - at least one receiver connected to the waveguide for accepting the electrical signal.

REMARKS

Drawing Objection:

The drawings are objected to under 37 CFR 1.83(a). The examiner states that "the dielectric waveguides with the gap being mounted on the substrate as recited in claim 29 must be shown or the feature(s) canceled from the claim(s)." Applicant respectfully submits that all of the recited features of claim 29 are illustrated in the drawings accompanying the as-filed specification. The written description on page 7 (lines 20-23) describes Figure 4 as showing a schematic of a backplane system B in accordance with the present invention, including a waveguide W mounted to a substrate S. The last line on page 7 (line 28) states "[t]he preferred waveguides will now be discussed." One such preferred waveguide is described with reference to Figure 15B on page 13. The preferred waveguide shown in Figure 15B contains the features recited in claim 29. Thus, the waveguide features of claim 29 are shown in the as-filed drawings. Rule 1.83(a) does not require every feature to be shown in a *single* figure, such as, for example, Figure 15B. Instead, Rule 1.83(a) merely requires that every feature be shown in the drawings. Accordingly, withdrawal of the drawing objection is earnestly solicited.

Status of the Claims:

Claims 1, 5, 17, 19, 20, 21, 23, and 28 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Barnett et al. (U.S. Pat. No. 5,929,728) and the Butterweck paper taken in combination. Claims 3 and 4 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over the rejection as applied to claim 1, and further in view of Ishikawa et al. Claims 16, 18, 22, and 24-27 are objected to as being dependent upon a

rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims 29-31 are allowed.

Applicant has amended independent claim 1 to recite the waveguide has *conductive* sidewalls. The sidewalls can be made from copper, or other conductive material known to those of ordinary skill in the art. See page 9, lines 6-27. In contrast, Butterweck teaches (Fig. 5 and the corresponding description) the use of *resistive* sidewalls. Accordingly, *Butterweck teaches away* from the embodiments recited in independent claim 1 and those claims depending therefrom. Furthermore, any reference merely disclosing waveguides with conductive sidewalls would not properly be combinable with Butterweck, because to do so would destroy Butterweck's intended function. Thus, claims 1, 5, 17, 19, 20, 21, 23, and 28 are patentably distinct from the combination of Barnett et al. and Butterweck.


Claims 3 and 4 depend from amended claim 1. Since Ishikawa et al. fails to remedy the shortcomings of the combination of Barnett et al. and Butterweck, claims 3 and 4 are patentably distinct from the combination of all three of the references of record.

Conclusion:

The foregoing represents a complete response to the Office Action, and Applicant submits that the claims in their present form are in condition for allowance. Early and favorable consideration is earnestly solicited.

Attached hereto is a marked-up version of the changes made to the application by the current amendment. The attached page is captioned "**VERSION WITH MARKINGS TO SHOW CHANGES MADE.**"

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Andrew J. Hager
Registration No. 44,141

Woodcock Washburn LLP
One Liberty Place - 46th Floor
Philadelphia PA 19103
Telephone: (215) 568-3100
Facsimile: (215) 568-3439

VERSION WITH MARKINGS TO SHOW CHANGES MADE**In the Claims:**

Claim 1 has been amended as follows:

1. (Thrice Amended) A backplane system, comprising:
 - a substrate [comprising a multilayer board];
 - a waveguide connected to the substrate, the waveguide having conductive sidewalls, and a gap [therein] for preventing propagation of a lower order mode into a higher order mode;
 - at least one transmitter connected to the waveguide for sending an electrical signal along the waveguide; and
 - at least one receiver connected to the waveguide for accepting the electrical signal.